

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-40

**Name:** Twin Lakes

**County:** Minnehaha

**Legal Description:** T105N-R52W Sec. 16-17, 20-21

**Location from nearest town:** 6 miles north and 1 mile west of Humboldt, SD

**Dates of present survey:** August 7-9, 2007 (netting)

**Dates of last survey:** July 19-20, 2006 (netting), September 18, 2006 (electrofishing)

Primary Game and Forage Species	Other Species
Walleye	Black Bullhead
Yellow Perch	

## PHYSICAL DATA

**Surface Area:** 287 acres

**Watershed area:** Unknown acres

**Maximum depth:** 20 feet

**Mean depth:** 9 feet

**Contour map available:** No  
only)

**Date mapped:** 2003 (shoreline

**Lake elevation observed during the survey:** Full

**Ownership of Lake and Adjacent Lakeshore Properties**

Twin Lakes is not listed as meandered public water in the State of South Dakota Listing of Meandered Lakes; however, the fishery is managed by the South Dakota Department of Game, Fish and Parks (GFP). GFP also owns and manages a 254 acre Game Production Area which includes much of the lakes. The remainder of the shoreline is privately owned.

### **Fishing Access:**

The Twin Lakes Game Production area has shore fishing access and a new boat ramp was just completed on the west side of the south lake. Efforts are being made to develop access to the north lake, or to deepen the channel connecting the two lakes.

### **Field Observations of Water Quality and Aquatic Vegetation:**

The Secchi reading was 76 cm (30 in) on the north lake. The water was more turbid on the shallower south lake, as usual, with a reading of only 30 cm (12 in). Abundant beds of sago pondweed (*Potamogeton pectinatus*), clasping leaf pondweed (*Potamogeton richardsonii*), northern water milfoil (*Myriophyllum exalbescens*), water buttercup (*Ranunculus longirostris*), and coontail (*Ceratophyllum demersum*) were observed in water up to 1.82 m (6 ft) deep. Common cattail (*Typha spp.*) and bulrush (*Scirpus spp.*) were abundant in shallow areas.

## **BIOLOGICAL DATA**

### **Methods:**

Twin Lakes was sampled on August 7-9, 2007, with two overnight gill-net sets and 5 overnight trap-net sets on each lake. The trap nets are constructed with 19-mm-bar-mesh (3/4 in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. The gill nets are 45.7 m long x 1.8 m deep (150 ft long x 6 ft deep) with one 7.6 m (25 ft) panel each of 13, 19, 25, 32, 38 and 51-mm-bar-mesh (½, ¾, 1, 1¼, 1½, and 2 in) monofilament netting.

### **Results and Discussion:**

#### **Gill Net Catch**

Walleye, black bullheads and yellow perch were the only species sampled in the gill nets this year on both lakes (Tables 1 and 2).

**Table 1.** Total catch from two overnight gill net sets at South Twin Lakes, Minnehaha County, August 7-9, 2007.

<b>Species</b>	<b>Number</b>	<b>Percent</b>	<b>CPUE<sup>1</sup></b>	<b>80% C.I.</b>	<b>Mean CPUE*</b>	<b>PSD</b>	<b>RSD-P</b>	<b>Mean Wr</b>
<b>Black Bullhead</b>	120	56.6	60.0	<u>+6.4</u>	69.5	14	0	98
<b>Walleye</b>	81	38.2	40.5	<u>+4.5</u>	51.3	21	1	93
<b>Yellow Perch</b>	11	5.2	5.5	<u>+1.9</u>	13.5	73	45	106

\* 2 years (2004, 2006)

**Table 2.** Total catch from three overnight gill net sets at North Twin Lakes, Minnehaha County, August 7-9, 2007.

<b>Species</b>	<b>Number</b>	<b>Percent</b>	<b>CPUE</b>	<b>80% C.I.</b>	<b>Mean CPUE*</b>	<b>PSD</b>	<b>RSD-P</b>	<b>Mean Wr</b>
<b>Walleye</b>	108	49.8	36.0	<u>+27.6</u>	38.0	26	6	92
<b>Black Bullhead</b>	94	43.3	31.3	<u>+15.9</u>	147.5	90	3	99
<b>Yellow Perch</b>	15	6.9	5.0	<u>+5.8</u>	1.5	67	33	112

\*One year (2006)

<sup>1</sup> See Appendix A for definitions of CPUE, PSD, RSD-P, and mean Wr.

## **Trap Net Catch**

Black bullheads made up 87.4% of the trap net sample on the South Lake (Table 3) and 86.4% on the North (Table 4). Walleye and yellow perch were the only other fish caught.

**Table 3.** Total catch from five overnight trap net sets at South Twin Lakes, Minnehaha County, August 7-9, 2007.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
<b>Black Bullhead</b>	429	87.4	85.8	<u>+35.1</u>	451.1	9	1	89
<b>Walleye</b>	50	10.2	10.0	<u>+5.7</u>	2.2	38	2	91
<b>Yellow Perch</b>	12	2.4	2.4	<u>+1.2</u>	2.1	25	8	100

\* 2 years (2004, 2006)

**Table 4.** Total catch from five overnight trap net sets at North Twin Lakes, Minnehaha County, August 7-9, 2007.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
<b>Black Bullhead</b>	266	86.4	53.2	<u>+24.9</u>	377.0	57	0	88
<b>Walleye</b>	31	10.1	6.2	<u>+3.8</u>	30.2	87	39	84
<b>Yellow Perch</b>	11	3.6	2.2	<u>+0.7</u>	6.8	36	18	109

\* One year (2006)

## **Walleye**

**Management objective:** Maintain a walleye population with a gill-net CPUE of at least 15, a PSD range of 30-60, and a growth rate of 356 mm (14 inches) by age-3.

Walleye gill-net CPUE and growth exceeded management objectives in 2007 (Tables 1, 2, and 5). Several strong year classes, produced by an aggressive stocking strategy, were present in the sample. PSD and RSD-P will increase as the strong age-1 and age-2 year classes grow. Larger walleyes were caught in the trap nets on the north lake (Table 4). The fish sampled by gill nets were in good condition with mean relative weights (Wr) between 90 and 100, which is high for midsummer. Large numbers of fathead minnows were seen in both lakes during the survey.



## **Creel Survey Results**

A creel survey was conducted on Twin Lakes from May through August 2004-2007 to obtain baseline data on marginal lakes and to monitor the effect of the one walleye over 24 inches daily limit regulation. Fishing pressure was much higher in 2007 (10.1 h/acre, Table 8) and all parties interviewed were South Dakota residents. The average trip length also increased to 3.26 h/trip.

Walleye catch jumped again in 2007 to 4,135 fish (Table 8). Boat angler is the north and south lakes commonly reported catching and releasing large numbers of walleyes per trip but very few fish over 24-inches were harvested. Shore fishing by early summer was difficult due to heavy vegetation.

**Table 8.** Estimates of fishing pressure and catch (harvest) of fish in Twin Lakes from May through August 2004-2007.

	Fishing Pressure (Hours)	Boat Pressure (Hours)	Shore Pressure (Hours)	Mean Trip Length (Hours)	Walleye Catch (Harvest)	Yellow Perch Catch (Harvest)	Black Bullhead Catch (Harvest)
2004	394	211	183	2.88	37 (0)	0 (0)	0 (0)
2005	657	452	205	2.12	25 (14)	0 (0)	0 (0)
2006	589	468	121	1.90	983 (0)	14 (0)	0 (0)
2007	2,909	2,337	572	3.26	4,135 (32)	28 (8)	1,000 (54)

**Table 9.** Number of angler interviews and estimates of hourly catch rate (harvest rate) of fish in Twin Lakes from May through August 2004-2007.

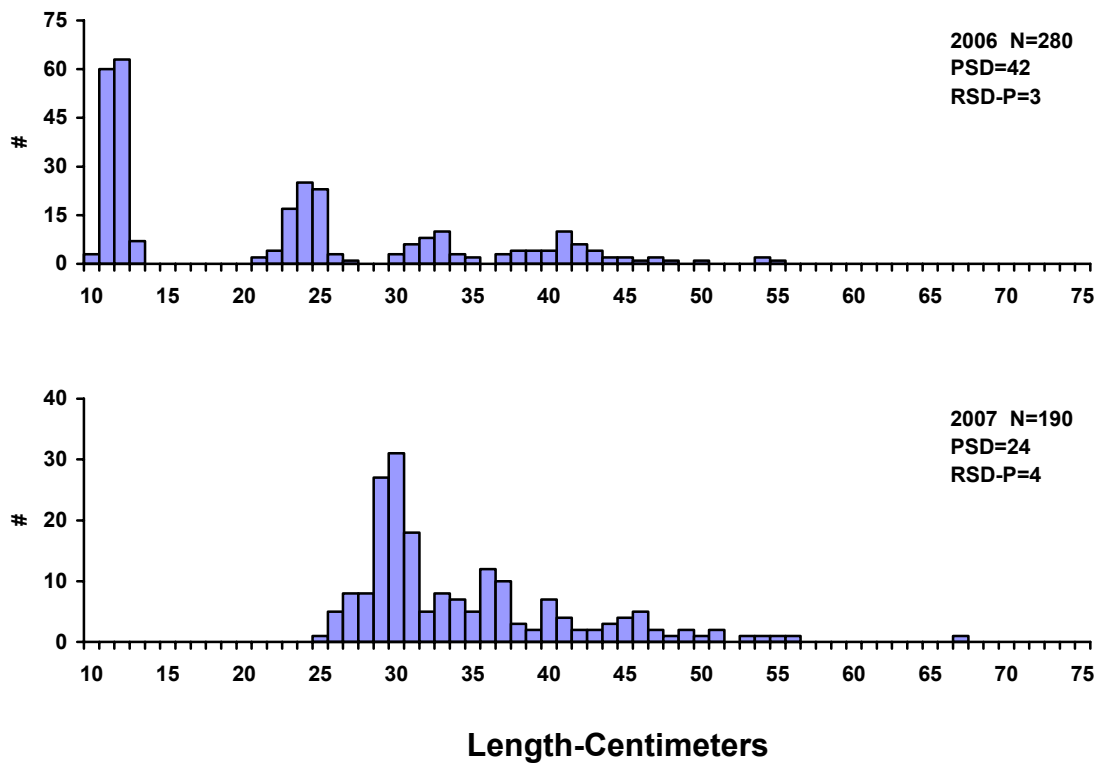
	Number of Interviews	Walleye Catch (Harvest)	Yellow Perch Catch (Harvest)	Black Bullhead Catch (Harvest)
2004	9	0.094 (0)	0 (0)	0 (0)
2005	14	0.038 (0.021)	0 (0)	0 (0)
2006	6	1.669 (0)	0.024 (0)	0 (0)
2007	34	1.42 (0.011)	0.01 (0.003)	0.344 (0.018)

## **MANAGEMENT RECOMMENDATIONS**

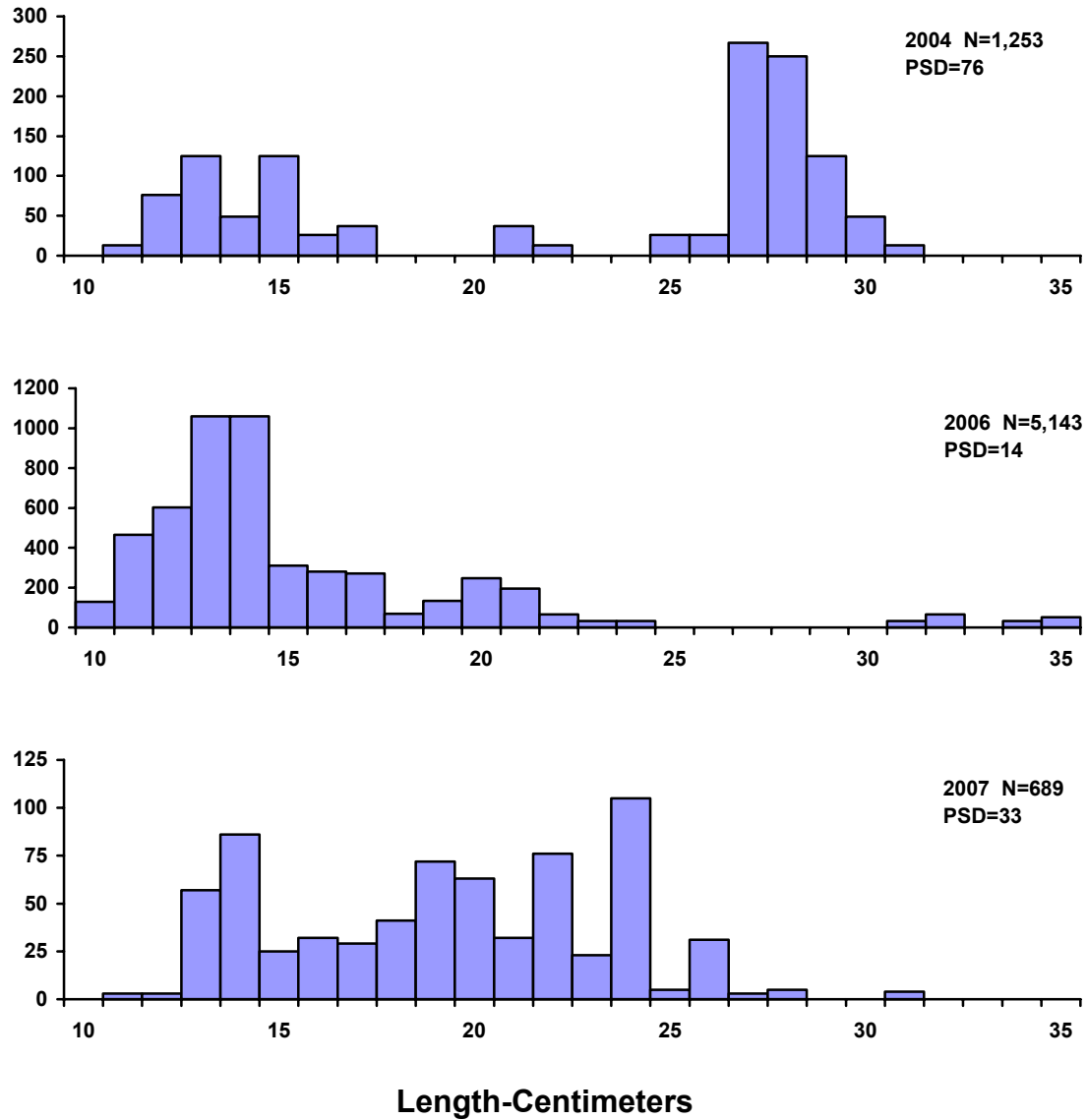
1. Finish the five-year evaluation of the special regulation and make a recommendation to continue or discard it by summer, 2008.
2. A new boat ramp has just been completed on the South lake. Propose a project to deepen the channel between the North and South lakes to improve boat access to the North lake.

**Table 10.** Stocking record for Twin Lakes, Minnehaha County, 1995-2007.

Year	Number	Species	Size
1995	32	Walleye	Adult
1996	500	Yellow Perch	Adult
2000	1,920	Yellow Perch	Adult
2002	109	Walleye	Adult
2003	58,784	Walleye	Fingerling
2004	5,606	Walleye	Large Fingerling
	25	Walleye	Juvenile
2005	19,616	Walleye	Large Fingerling
2006	31,030	Walleye	Fingerling
	5,372	Yellow Perch	Adult
2007	1,493	Yellow Perch	Adult



**Figure 1.** Length frequency histograms for walleye sampled with gill nets in Twin Lakes, Minnehaha County, 2006 and 2007.



**Figure 2.** Length frequency histograms for black bullheads sampled with trap nets in Twin Lakes, Minnehaha County, 2004, 2006, and 2007.

**Appendix A.** A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

**Catch Per Unit Effort (CPUE)** is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill-net nights of effort, catch per hour of electrofishing, etc.

**Proportional Stock Density (PSD)** is calculated by the following formula:

$$\text{PSD} = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

**Relative Stock Density (RSD-P)** is calculated by the following formula:

$$\text{RSD-P} = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters.

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25	38	51	63	76
Sauger	20	30	38	51	63
Yellow perch	13	20	25	30	38
Black crappie	13	20	25	30	38
White crappie	13	20	25	30	38
Bluegill	8	15	20	25	30
Largemouth bass	20	30	38	51	63
Smallmouth bass	18	28	35	43	51
Northern pike	35	53	71	86	112
Channel catfish	28	41	61	71	91
Black bullhead	15	23	30	38	46
Common carp	28	41	53	66	84
Bigmouth buffalo	28	41	53	66	84
Smallmouth buffalo	28	41	53	66	84

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For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

**Relative weight (Wr)** is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.